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Research / Mapping Activities

Monsoon Floods in the Northeastern Bangladesh

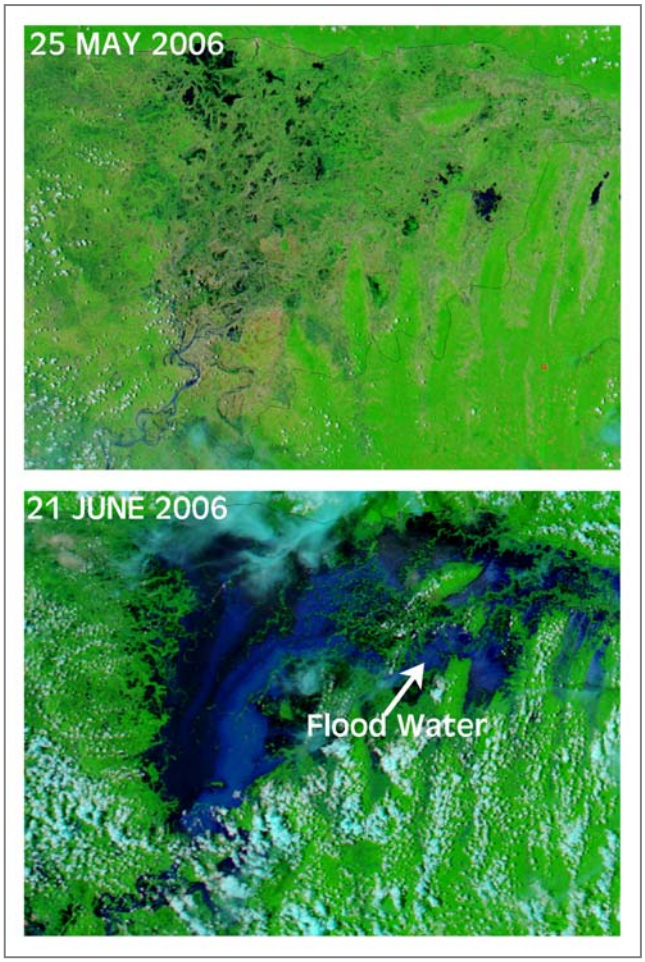

Fig. 1: Monsoon Floods in the Northeastern Bangladesh Detected on the Aqua Modis Satellite Image.

South-Asian monsoon starts in June and continues till September and accounts for most of the rainfall in Bangladesh. A large portion of depressed land is extended over the northeastern part of the country covering greater Sylhet and Mymensingh region. Many parts of these regions are covered by monsoon floods when rains drenched the region in June 2006. On the 21st June NASA's Aqua Satellite captured the bottom image (Fig. 1) depicted the floods stretched across hundreds of kilometres, which had been dry land a month earlier (top image).

The satellite images combined bands 1 (visible), 2 (near infra-red) and 7 (short-wave infrared) as RGB (red, green and blue) allows water to stand out against the land. Water appears as black and dark blue. Plant coverage is green, and clouds are pale blue and white. Floods claimed a number of lives and made more than 10,000 people homeless.

Tropical Cyclone 'Mala' 2006

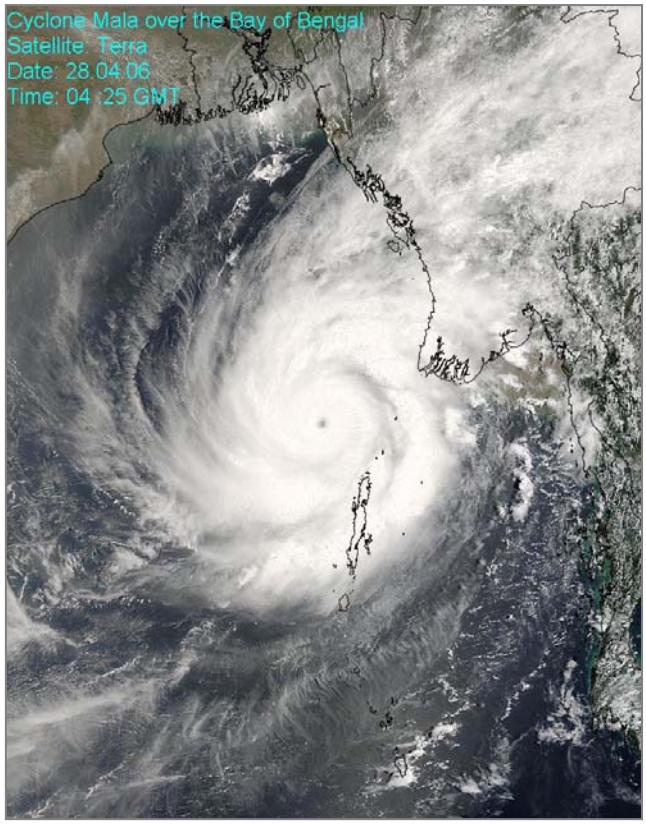

Fig. 2: Cyclone 'Mala' Over the Bay of Bengal.

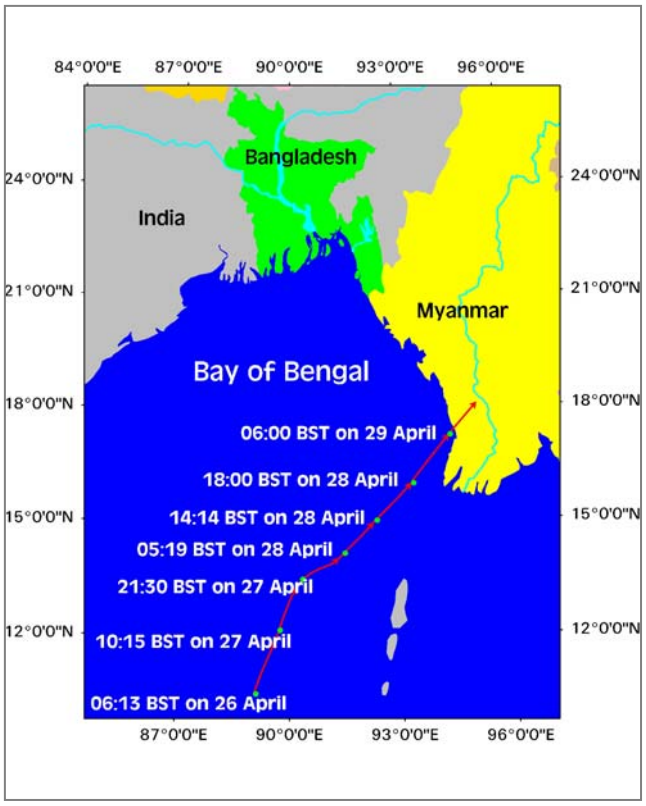

Fig. 3: Track of cyclone 'Mala'.

The tropical cyclone is the typhoon of the Pacific Ocean and hurricane of the Atlantic. It is becoming a growing concern as 'Hurricane Katherine', one of the strongest Hurricane in the United States history devastated the south-eastern region of the country last year.

Cyclone is a vortex or circular storm that rotates counter-clockwise in the northern hemisphere and clock-wise in the southern hemisphere. The tropical cyclone gets its energy from the latent heat of condensation. There is no agreement yet as to why these tropical cyclones are formed. The weather conditions required to produce them are known; once formed, the storms can be tracked.

Cyclone 'Mala' was originated at the southeast Bay on 25th April 2006 as a low pressure. This disturbance was detected and monitored continuously by SPARRSO. It receives meteorological data from NOAA-AVHRR and MTsat-5 satellite. On a NOAA-image of 26th April (6:13 BST) detected the low-pressure was intensified and formed a cyclone. Its location was 10:34^{o}N and 89.07^{o}E. Then the cyclone started moving towards the north-east direction. On 27th April (21:34 BST image) it was located at 14:12^{o}N and 91.32^{o}E. On the 28th April (21:12 BST) it turned into a severe cyclone and located at 15:27^{o}N and 92:33^{o}E and started moving towards the Arakan coast of Myanmar. On the 29th April it was at 17:48^{o}N and 94.30^{o}E and assumed to hit Myanmar on the Arakan coast.

By the influence of this cyclone, a gusty wind and rain prevailed over St. Martin's Island, Cox's Bazar and Chittagong. Due to gusty wind and rain it damaged crops of some part of the affected area. Figures show the cyclone 'Mala' on the Terra Modis satellite image (Fig. 2) and the track followed by the cyclone (Fig. 3).

Boro Rice Monitoring-2006

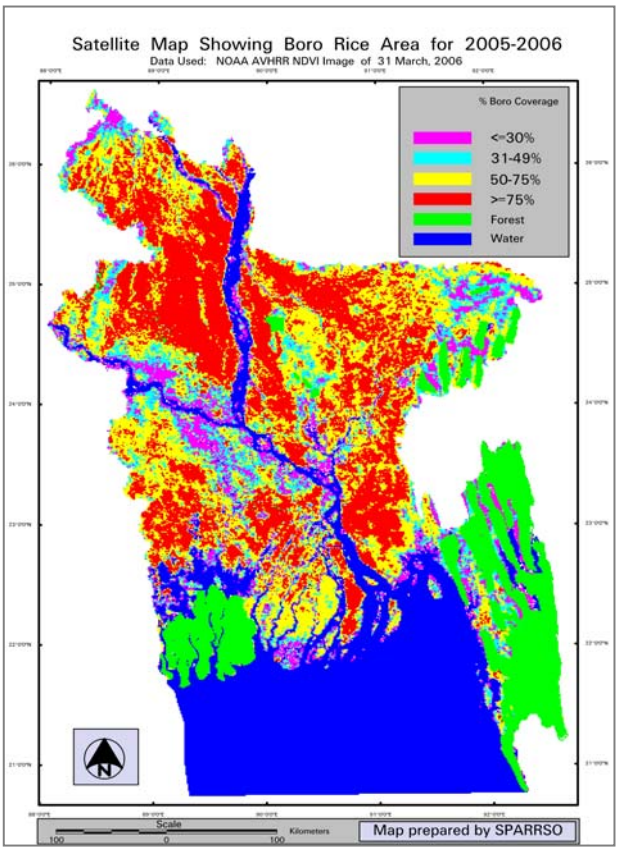

Fig.4: Boro rice estimation of 2006.

Crop monitoring using remote sensing technology is one of the regular activities of SPARRSO. AVHRR data from NOAA satellite of USA are being used extensively for monitoring of rice crop. SPARRSO has its ground station to receive the real time images/data directly from the above-mentioned satellite. For this study the NOAA AVHRR images on 31th March 2006 has been used in estimating crop area coverage and yield of Boro rice for the year 2006.

Special techniques had to be applied during the data processing for rice acreage and yield estimation. Before processing the image radiometric correction and geo-referencing have been done on the image. Channel 1 and 2 of NOAA AVHRR, which acquire information in the visible and near infrared regions have been used to calculate the crop area and vigor of crops. Data from these two channels are combined to calculate the Normalized Difference Vegetation Index (NDVI). Homestead, forest and other fallow-land areas were excluded by merging several other relevant layers on the raster image.

A correction algorithm developed by SPARRSO has employed to take into account the fractional coverage and spatial heterogeneity of the Boro rice area. An Arc-Info based administrative boundary layer of the country has been used to obtain the crop statistics from the NOAA AVHRR derived NDVI data product. Finally, the area of Boro rice coverage (Fig. 4) and weighted average yield has been calculated all over the country in 2006. The results/information derived from this process has been supplied to the Government.

New Members of SPARRSO

Mr. K.H. Masud Siddiqui joined SPARRSO as Member on April 3, 2006. He had his M.A. from the University of Dhaka. Later he studied Economics in the University of Manchester, U.K. He is a member of Bangladesh Civil Service (Administration) cadre. He joined in the government service in 1982. He has a number of articles on Economics, Literature, Culture, Rural and Gender Development issues.

Dr. Syed Umar Khyyam joined as Member, SPARRSO on the 10th April 2006. He is Deputy Secretary to the Government of the People's Republic of Bangladesh. Dr. Khyyam joined in Bangladesh Civil Service as

a member of Health Cadre in 1980. He is a medical graduate and public health specialist. He has working experience with WHO and DFID supported organizations. He is working as Member and Head of Technology Wing of the Organization.

News

New Project on Forest Resource Assessment

SPARRSO has initiated the remote sensing component of the project: Strengthening Capacity to Generate Quality Information on the Forest of Bangladesh (FAO/TCP/ BGD/30001).
The inaugural meeting of the project "Strengthening Capacity to Generate Quality

Information on the Forest Resources of Bangladesh" was held on the 8th June 2006 at Bangladesh Space Research & Remote Sensing Organization (SPARRSO) committee room. Mr. Abdul Halim Howlader, Chairman (in-charge) inaugurated the meeting. Dr. Jinnahtul Islam, Project Director of the remote sensing component presented the details of the remote sensing part. Mr. Ruhul Mohaiman Choudhury, FAO local consultant presented the field inventory component of the project. SPARRSO officials, project co-workers and delegates from the Forest Department were present at the meeting. The project will be completed within six months time.

SPARRSO Signed an Agreement with KDA

SPARRSO signed an Agreement with Khulna Development Authority (KDA) on 11th June, 2006. KDA is going to extend their structural/ master plan up to Mongla Port area (the 2nd largest International Sea Port of Bangladesh). SPARRSO will provide consultancy services to prepare a landuse map using the latest information/data and high resolution QUICKBIRD satellite image.

Chairman (In-charge) of SPARRSO Mr. Abdul Halim Howlader and Chairman of KDA Brig. Gen. Abu Naim Md. Shahidullah on behalf of both sides signed the Agreement.

Return of Dr. Dewan Abdul Quadir

Dr. Dewan Abdul Quadir, Chief Scientific Officer has returned back to SPARRSO on the 27th June 2006 from SMRC (SAARC Meteorological Research Centre), Dhaka. He had been working there for six years on deputation from SPARRSO.

Visitors to SPARRSO

Dr. Francesco Holecz, Chief Executive Officer, sarmap s.a., Cascine di Barico, Ch-6989, Purasca and Mr. William J. Dick, Consultant, Commodity Risk Management Group, Agriculture and Rural Development, the World Bank, Washington, USA visited SPARRSO on 26 January 2006.

Participation in Training/ Seminar/ Conference

Dr. Abdus Shahid, PSO, participated in the workshop on "Baseline Study on Disaster Risk Management and Climate Change Impacts Knowledge and Understanding among CDMP Stakeholders" held at Spectra Convention Centre, - organized by Bangladesh Centre for Advanced Studies (BCAS) and CDMP on 19 April 2006.

Mr. Abul Kalam, PSO, attended the Inaugural Ceremony of the Training Workshop on "Numerical Weather Prediction (NWP) using FSU GSM and NRSM models", at BCC Bhaban, Agargaon, Sher-e-Bangla Nagar, Dhaka on 4 June 2006.

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The SPARRSO Newsletter is published quarterly. We welcome comments, questions and suggestions from our honourable readers.